

**Amendments to the claims:**

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims:**

1. An ALD process for deposition of a metal selected from Pd, Rh, Ru, Pt and Ir comprising forming a layer comprising the metal on a surface comprising a material selected from W, Ta, Cu, Ni, Co, Fe, Mn, Cr, V Nb, tungsten nitride, tantalum nitride, titanium nitride, dielectrics and activated dielectrics at a temperature ranging from  $>60^{\circ}\text{C}$  to  $<260^{\circ}\text{C}$ .
2. An ALD process according to claim 1, wherein forming a layer comprises sequentially pulsing into a chamber containing the surface a precursor for the metal and a reducing gas selected from hydrogen, glyoxylic acid, oxalic acid, formaldehyde, 2-propanol, imidazole and plasma-activated hydrogen.
3. An ALD process for deposition of a metal selected from Pd, Rh, Ru, Pt and Ir comprising  

providing a surface comprising a material selected from noble metals, W, Ta, TaN, tungsten nitride, tantalum nitride, titanium nitride, Cu, Ni, Co, Fe, Mn, Cr, V and Nb in a reaction chamber;

pulsing a precursor for the metal into the chamber at a temperature ranging from  $>60^{\circ}\text{C}$  to  $<260^{\circ}\text{C}$ ; and

pulsing hydrogen gas into the chamber.
4. An ALD process according to claim 3 wherein the surface is a noble metal.
5. An ALD process according to claim 3 wherein the surface is a pretreated metallic surface selected from W, Ta, tungsten nitride, tantalum nitride, and titanium nitride.
6. An ALD process according to claim 3 wherein the surface is a metal selected from Cu, Ni, Co, Fe, Mn, Cr, V and Nb.
7. An ALD process for deposition of a metal selected from Pd, Rh, Ru, Pt and Ir comprising

providing a surface comprising a material selected from noble metals, W, Ta, Cu, Ni, Co, Fe, Mn, Cr, V Nb, tungsten nitride, tantalum nitride, titanium nitride, dielectrics and activated dielectrics in a reaction chamber at a temperature ranging from  $>60^{\circ}\text{C}$  to  $<260^{\circ}\text{C}$ ;

pulsing a precursor for the metal into the chamber; and

pulsing into the chamber a reducing gas selected from glyoxylic acid, oxalic acid, formaldehyde, 2-propanol, and imidazole.

8. An ALD process according to claim 7 wherein the reducing gas is glyoxylic acid.
9. An ALD process according to claim ~~7 or 8~~ wherein the activated dielectric surface comprises at least one of thiol, sulfide, tetrasulfide, phosphine, phosphide or amine groups.
10. An ALD process according to claim ~~7 or 8~~ wherein the activated dielectric surface comprises thiol groups.
11. An ALD process according to claim ~~7, 8 or 9~~ wherein the dielectric is selected from CVD polymers, organic-inorganic hybrids, and silicon or metals having an oxide-terminated surface.
12. An ALD process for deposition of a metal selected from Pd, Rh, Ru, Pt and Ir comprising
 

providing a substrate in a reaction chamber;

pulsing a precursor for the metal into the chamber at a temperature ranging from  $>60^{\circ}\text{C}$  to  $<260^{\circ}\text{C}$ ; and

pulsing plasma-activated hydrogen gas into the chamber.
13. An ALD process according to ~~any of the above claims~~ claim 1, wherein the precursor is a metal  $\beta$ -diketonate compound.
14. An ALD process according to ~~any of the above claims~~ claim 1, wherein the precursor is a metal-hfac compound.
15. An ALD process according to claim 1 ~~claims 1-12~~, wherein the precursor is selected from  $\text{Pd(hfac)}_2$ ,  $\text{Ru(hfac)}_2$ ,  $\text{Rh(hfac)}_2$ ,  $\text{Pt(hfac)}_2$ ,  $\text{Ir(hfac)}_2$ ,  $\text{Ir(acac)}_2$ ,  $\text{Pd(tmhd)}_2$ ,  $\text{Ru(tmhd)}_2$ ,

$\text{Rh}(\text{tmhd})_2$ ,  $\text{Pt}(\text{tmhd})_2$ , and  $\text{Ir}(\text{tmhd})_2$ .

16. An ALD process according to ~~any of the above claims~~ claim 1, wherein the metal is Pd.

17. An ALD process according to ~~any of the above claims~~ claim 1, wherein the precursor is  $\text{Pd}(\text{hfac})_2$ .